

IN THE CLAIMS

Please add/cancel/amend the following claims as indicated:

1. (Currently amended) A substantially water-soluble polymer comprising a first subunit comprising a first nucleic acid, ~~wherein said first subunit is incorporated into said polymer using a first subunit precursor comprising said first nucleic acid~~ acid and an ethylene-containing moiety, the first subunit joined to a framework selected from liposomes, micelles, colloids, proteins, lipids, dendrimers, protein aggregates, modified cells, modified viral particles and silica beads.
2. (Currently amended) The polymer according to claim 1, wherein said first subunit is non-covalently attached to a second subunit the framework.
3. (Original) The polymer according to claim 1, further comprising a cleavable moiety.
4. (Currently amended) The polymer according to claim 3, wherein said cleavable moiety is located between said first subunit and said ~~second subunit~~ framework,
5. (Original) The polymer according to claim 3, wherein said cleavable moiety is a member selected from groups cleaved by change in pH, enzymatic action, reduction, oxidation, light, heat and combinations thereof
6. (Original) The polymer according to claim 5, wherein said cleavable moiety is cleaved by a process occurring in a biological system.
7. (Original) The polymer according to claim 6, wherein said cleavable moiety is a member selected from disulfides, esters, phosphodiester and combinations thereof.
8. (Original) The polymer according to claim 1, wherein said first subunit further comprises a linker group adjoining said first nucleic acid and said ethylene- containing moiety.
9. (Currently Amended) The polymer according to claim 8, wherein said linker group ~~arm~~ comprises a cleavable moiety.

10. (Currently Amended) The polymer according to claim 98, wherein said cleavable moiety is a member selected from a group groups cleaved by change in pH, enzymatic action, reduction, oxidation, light, heat and combinations thereof.

11. (Original) The polymer according to claim 9, wherein said cleavable moiety is cleaved by a process occurring in a biological system.

12. (Original) The polymer according to claim 10, wherein said cleavable moiety is a member selected from disulfides, esters, phosphodiester and combinations thereof

13. (Original) The polymer according to claim 1, wherein said ethylene- containing moiety comprises a member selected from $-\text{CH}_2=\text{CHX}^1$, $-\text{CH}_2=\text{CX}^2\text{Y}^1$ and combinations thereof, wherein

X^1 , X^2 and Y^1 are members independently selected from H, (=O), $-\text{NR}^1\text{R}^2$, $-\text{OH}$, and $-\text{OR}^3$, wherein

R^1 , R^2 and R^3 are members independently selected from H, alkyl, substituted alkyl, aryl and substituted aryl.

14. (Original) The polymer according to claim 13, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and substituted alkyl.

15. (Original) The polymer according to claim 14, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and alkyl substituted with at least one moiety selected from $-\text{OH}$, $-\text{O}-$ and combinations thereof

16. (Original) The polymer according to claim 15, wherein at least one of R^1 , R^2 and R^3 comprises a moiety selected from poly(ethyleneglycol), poly(propyleneglycol) and combinations thereof.

17. (Currently Amended) A—The polymer comprising a first subunit comprising a first nucleic and an ethylene-containing moiety, the first subunit joined to a framework, the framework comprising either (a) a homopolymer or copolymer of a monomer selected from according to claim 1, wherein said polymer comprises a member acrylate, acrylamide, C₁-C₆ alkylacrylate, (alkyl)acrylamide, —methylmethacrylate, triethyleneglycolmethacrylate, poly(ethyleneglycol)methacrylate, hydroxyethylmethacrylate, glycerylmethacrylate, vinyl alcohol, ethylcyanoacrylate and combinations thereof or (b) a homopolymer or copolymer selected from poly(ethylene glycol), polyethylene oxide, poly(aminoacid), poly(glutamic acid), poly(aspartic acid), poly(lactic acid), poly(glycolic acid), poly(succinimide), poly(esters), poly(carbohydrates), polyols, poly(ethers), polyamines, chondroitin sulfate, crosslinked liposomes, poly (N-vinylpyrrolidone), poly(ethylene-vinyl acetate), poly(urethanes), poly(maleic acid homo- or co-polymer), hyalouronic acid, poly(anhydrides) and poly(vinyl alcohols).

18. (Original) The polymer according to claim 1, further comprising a tissue- specific targeting moiety.

19. (Original) The polymer according to claim 1, further comprising a moiety that enhances cellular uptake.

20. Cancelled.

21. Cancelled.

22. Cancelled.

23. Cancelled.

24. Cancelled.

25. Cancelled.

26. Cancelled.

27. (Currently Amended) The polymer according to claim 1, wherein said polymer is a copolymer of said first subunit and a second subunit, the second subunit having a sequence different from the of said first subunit.

28. (Original) The polymer according to claim 27, wherein said second subunit comprises a third nucleic acid.

29. (Original) The polymer according to claim 28, wherein said third nucleic acid has a sequence different from that of said first nucleic acid.

30. (Currently Amended) A ~~polymeric particle~~ polymer comprising a first subunit comprising a first nucleic acid, ~~wherein said first subunit is incorporated into said polymer using a first subunit precursor comprising~~ acid and an ethylene-containing moiety, the first subunit covalently or non-covalently joined to a polymeric framework and further wherein the polymeric particle further comprises a tissue-specific targeting moiety.

31. (Currently Amended) The ~~particle~~ polymer according to claim 30, wherein said first subunit further comprises a linker group adjoining said first nucleic acid and said ethylene-containing moiety.

32. (Currently amended) The ~~particle~~ polymer according to claim 31, wherein said linker ~~arm~~ group comprises a cleavable moiety.

33. (Currently Amended) The ~~particle~~ polymer according to claim ~~31~~ 32, wherein said cleavable moiety is a member ~~selected from~~ capable of being ~~groups~~ cleaved by a change in pH, enzymatic action, reduction, oxidation, light, heat or a ~~and~~ combinations thereof.

34. (Currently Amended) The ~~particle~~ polymer according to claim 32, wherein said cleavable moiety is cleaved by a process occurring in a biological system.

35. (Currently Amended) The ~~particle~~ polymer according to claim 33, wherein said cleavable moiety is a member selected from disulfides, esters and combinations thereof.

36. (Currently Amended) The ~~partiele~~ polymer according to claim 30, wherein said ethylene-containing moiety comprises a member selected from $--CH_2=CHX^1$, $-CH_2=CX^2Y^1$ and combinations thereof, wherein X^1 , X^2 and Y^1 are members independently selected from H, (=O), $-NR^1R^2$, $-OH$, and $-OR^3$, wherein R^1 , R^2 and R^3 are members independently selected from H, alkyl, substituted alkyl, aryl and substituted aryl.

37. (Currently Amended) The ~~partiele~~ polymer according to claim 36, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and substituted alkyl.

38. (Currently Amended) The ~~partiele~~ polymer according to claim 37, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and alkyl substituted with at least one moiety selected from $-OH$, $-O-$ and combinations thereof.

39. (Currently Amended) The ~~partiele~~ polymer according to claim 38, wherein at least one of R^1 , R^2 and R^3 comprises a moiety selected from poly(ethyleneglycol), poly(propyleneglycol) and combinations thereof.

40. (Currently Amended) The ~~partiele~~ polymer according to claim 30, wherein said ~~polymer~~ polymeric framework comprises a either (a) a polymer derived from a member selected from acrylate, acrylamide, C_1 - C_6 alkylacrylate, (alkyl)acrylamide, methylmethacrylate, triethyleneglycolmethacrylate, poly(ethyleneglycol)methacrylate, hydroxyethylmethacrylate, glycerylmethacrylate, vinyl alcohol, ethylcyanoacrylate and combinations thereof; or (b) a member selected from liposomes, micelles, colloids, sugars, proteins, lipids, nucleic acids, dendrimers, protein aggregates, modified cells, modified viral particles, peptides, polysaccharides and silica beads; or (c) a homopolymer or copolymer selected from poly(ethylene glycol), polyethylene oxide, poly(aminoacid), poly(glutamic acid), poly(aspartic acid), poly(lactic acid), poly(glycolic acid), poly(succinimide), poly(esters), polysaccharides, poly(carbohydrates), polyols, poly(ethers), polyamines, chondroitin sulfate, crosslinked liposomes, peptides, dextran derivatives, poly (N-vinylpyrrolidone), poly(ethylene-vinyl acetate), poly(urethanes), poly(maleic acid homo- or co-polymer), hyalouronic acid, poly(glycerol), starch, poly(anhydrides), poly(vinyl alcohols), and poly(orthoesters).

41. Cancelled.

42. (Currently Amended) The ~~particle~~ polymer according to claim 30, further comprising a moiety that enhances cellular uptake.

43. Cancelled.

44. (Currently Amended) The ~~particle~~ polymer according to claim 30, wherein said first nucleic acid is hybridized to a second nucleic acid.

45. (Currently Amended) The ~~particle~~ polymer according to claim 44, wherein said first nucleic acid is a single-stranded nucleic acid.

46. (Currently Amended) The ~~particle~~ polymer according to claim 44, wherein said first nucleic acid is a double-stranded nucleic acid.

47. (Currently Amended) The ~~particle~~ polymer according to claim 45, wherein said second nucleic acid is a double-stranded nucleic acid.

48. (Currently Amended) The ~~particle~~ polymer according to claim 46, wherein said second nucleic acid is a single-stranded nucleic acid.

49. Cancelled.

50. (Currently Amended) The ~~particle~~ polymer according to claim 30, wherein said polymer is either a homopolymer of said first subunit or is a copolymer of said first subunit and a second subunit.

51. (Currently Amended) The ~~particle~~ polymer according to claim 50, wherein said second subunit comprises a third nucleic acid.

52. (Currently Amended) The ~~particle~~ polymer according to claim 51, wherein said third nucleic acid has a sequence different from that of said first nucleic acid.

53. (Currently Amended) The ~~particle~~ polymer according to claim 30, wherein said particle is substantially water-soluble.

54. (Currently Amended) The ~~particle~~ polymer according to claim 30, wherein said particle is substantially water-insoluble.

55. (Currently Amended) The ~~particle~~ polymer according to claim 30, further comprising a bioactive compound encapsulated by said polymer.

56. (Currently Amended) A pharmaceutical formulation comprising a pharmaceutically acceptable carrier and the a substantially water-soluble polymer of claim 1 ~~comprising a first subunit comprising a first nucleic acid, wherein said first subunit is incorporated into said polymer using a first subunit precursor comprising said first nucleic acids and an ethylene-containing moiety.~~

57. (Currently Amended) A pharmaceutical formulation comprising a pharmaceutically acceptable carrier and the a ~~polymeric particle~~ polymer of claim 17 ~~comprising a first subunit comprising a first nucleic acid, wherein said first subunit is incorporated into said polymer using a first subunit precursor comprising said first nucleic acid and an ethylene-containing moiety.~~

58. Cancelled.

59. Cancelled.

60. Cancelled.

61. Cancelled.

62. Cancelled.

63. Cancelled.

64. Cancelled.

65. Cancelled.
66. (New) The polymer according to Claim 30, wherein the tissue-specific targeting moiety is a cell and tissue selective receptor.
67. (New) The polymer according to Claim 66, wherein the cell and tissue selective receptor is an asialoglycoprotein receptor.
68. (New) The polymer according to Claim 30, wherein the tissue-specific targeting moiety is capable of selectively binding to a targeted tissue.
69. (New) The polymer according to Claim 30, wherein the tissue-specific targeting moiety is an antibody.
70. (New) The polymer according to Claim 30, wherein the tissue-specific targeting moiety is a transport macromolecule facilitator.
71. (New) The polymer according to Claim 30, wherein the tissue-specific targeting moiety is biotin or folate receptor, transferring receptor, insulin receptor or a mannose receptor.
72. (New) The polymer according to Claim 30, wherein the tissue-specific targeting moiety is a hepatocyte selective DNA carrier.
73. A polymeric material comprising:
- (i.) a homopolymer or a copolymer;
 - (ii.) a first subunit precursor comprising a first nucleic acid and an ethylene-containing moiety, the first subunit precursor being covalently or non-covalently linked to the homopolymer or copolymer; and
 - (iii.) a bioactive compound encapsulated by the homopolymer or copolymer

further wherein the homopolymer or copolymer is chemically distinct from the first nucleic acid of the first subunit precursor.

74. (New) The polymer according to claim 17, wherein said first subunit further comprises a linker group adjoining said first nucleic acid and said ethylene-containing moiety.

75. (New) The polymer according to claim 74, wherein said linker group comprises a cleavable moiety.

76. (New) The polymer according to claim 75, wherein said cleavable moiety is a member selected from a group capable of being cleaved by a change in pH, enzymatic action, reduction, oxidation, light, heat or a and combinations thereof.

77. (New) The polymer according to claim 75, wherein said cleavable moiety is cleaved by a process occurring in a biological system.

78. (New) The polymer according to claim 75, wherein said cleavable moiety is a member selected from disulfides, esters and combinations thereof.

79. (New) The polymer according to claim 17, wherein said ethylene-containing moiety comprises a member selected from $--CH_2=CHX^1$, $-CH_2=CX^2Y^1$ and combinations thereof, wherein X^1 , X^2 and Y^1 are members independently selected from H, (=O), $-NR^1R^2$, -OH, and -OR, wherein R^1 , R^2 and R^3 are members independently selected from H, alkyl, substituted alkyl, aryl and substituted aryl.

80. (New) The polymer according to claim 79, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and substituted alkyl.

81. (New) The polymer according to claim 80, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and alkyl substituted with at least one moiety selected from -OH, -O- and combinations thereof.

82. (New) The polymer according to claim 81, wherein at least one of R^1 , R^2 and R^3 comprises a moiety selected from poly(ethyleneglycol), poly(propyleneglycol) and combinations thereof.
83. (New) The polymer according to claim 17, further comprising a moiety that enhances cellular uptake.
84. (New) A pharmaceutical formulation comprising a pharmaceutically acceptable carrier and the polymer of claim 30.
85. (New) The polymeric material according to claim 73, wherein said first subunit further comprises a linker group adjoining said first nucleic acid and said ethylene-containing moiety.
86. (New) The polymeric material according to claim 85, wherein said linker group comprises a cleavable moiety.
87. (New) The polymeric material according to claim 86, wherein said cleavable moiety is a member a group capable of being cleaved by a change in pH, enzymatic action, reduction, oxidation, light, heat or a combination thereof.
88. (New) The polymeric material according to claim 86, wherein said cleavable moiety is cleaved by a process occurring in a biological system.
89. (New) The polymeric material according to claim 86, wherein said cleavable moiety is a member selected from disulfides, esters and combinations thereof.
90. (New) The polymeric material according to claim 73, wherein said ethylene- containing moiety comprises a member selected from $--CH_2=CHX^1$, $-CH_2=CX^2Y^1$ and combinations thereof, wherein X^1 , X^2 and Y^1 are members independently selected from H, (=O), $-NR^1R^2$, $-OH$, and $-OR$, wherein R^1 , R^2 and R^3 are members independently selected from H, alkyl, substituted alkyl, aryl and substituted aryl.

91. (New) The polymeric material according to claim 90, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and substituted alkyl.
92. (New) The polymeric material according to claim 91, wherein R^1 , R^2 and R^3 are independently selected from H, alkyl and alkyl substituted with at least one moiety selected from -OH, -O- and combinations thereof.
93. (New) The polymeric material according to claim 92, wherein at least one of R^1 , R^2 and R^3 comprises a moiety selected from poly(ethyleneglycol), poly(propyleneglycol) and combinations thereof.
94. (New) The polymeric material according to claim 73, wherein said homopolymer or copolymer comprises a either (a) member selected from acrylate, acrylamide, C_1 - C_6 alkylacrylate, (alkyl)acrylamide, methylmethacrylate, triethyleneglycolmethacrylate, poly(ethyleneglycol)methacrylate, hydroxyethylmethacrylate, glycerylmetaerylate, vinyl alcohol, ethylcyanoacrylate and combinations thereof; or (b) a member a selected from liposomes, micelles, colloids, sugars, proteins, lipids, nucleic acids, dendrimers, protein aggregates, modified cells, modified viral particles, peptides, polysaccharides and silica beads; or (c) a homopolymer or copolymer selected from poly(ethylene glycol), polyethylene oxide, poly(aminoacid), poly(glutamic acid), poly(aspartic acid), poly(lactic acid), poly(glycolic acid), poly(succinimide), poly(esters), polysaccharides, poly(carbohydrates), polyols, poly(ethers), polyamines, chondroitin sulfate, crosslinked liposomes, peptides, dextran derivatives, poly (N-vinylpyrrolidone), poly(ethylene-vinyl acetate), poly(urethanes), poly(maleic acid homo- or copolymer), hyalouronic acid, starch, poly(anhydrides) and poly(vinyl alcohols).
95. (New) A pharmaceutical formulation comprising a pharmaceutically acceptable carrier and the substantially water-soluble polymer of claim 73.